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ABSTRACT

The variables used in most readability formulas consist of counts of language elements which highly relate to comprehension scores on passages of a wide range of difficulty. The variables most often used are some measure of word difficulty and yield an index score representing the style difficulty of the passages to which they are applied difficulty at certain times and for certain purposes, but not at other times. What is needed, as indicated by the author, is better specification of when and under what conditions readability measures are likely to be predictive. The reader's level of performance, including his comprehension, speed of reading, and depth of reading, is a function of his level of competence. These interact with the reader's level of motivation, which in turn interacts with the readability level of material. (WR)

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Factors Relating to Correspondence and Other Non-Traditional Instruction: The Role of Readability

During the last 50 years, a number of formulas have been developed to predict how readable prose will be to prospective readers. The variables in such formulas usually consist of counts of language elements which correlate highly with comprehension scores on passages of a wide range of difficulty. The variables are usually chosen so that, in addition to their predictiveness, they are objective, quick, and easy to apply. Most commonly used are some measure of word difficulty, such as length or familiarity, and of sentence difficulty, such as length or complexity. Occasionally, rather unusual counts are tried, such as: the percentage of words beginning with the letters W, H, and B versus those beginning with I and E; or, mean word depth in sentences; or, the ratio of structural words per noun; etc.

Whatever the variables used, the formulas are designed to yield index scores representing the style difficulty of the passages to which they are applied. Most often these scores are in terms of reading grade levels or corrected grade levels of some sort. Generally speaking, such scores have been found useful in instructional and informational applications of language, i.e., in education and mass communication.

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Perhaps because these measures of readability are presented as formulas, enthusiasts occasionally seem to assume they are more accurate predictors than they really are--sometimes even down to the second decimal point. Or, that they are predictive of difficulty under all reading conditions. Critics, on the other hand, seem to know intuitively that this cannot be the case. Which occasionally leads them to reject readability measurement altogether--and sometimes pointedly.

As usual, truth lies somewhere between the two views. An on-going review of the literature clearly shows that readability measures are predictive of reading difficulty at certain times and for certain purposes, but not others. In experimental situations, for example, a version of material with a more readable score sometimes leads to greater comprehension than one with a less readable score, but sometimes not. What is needed is better specification of when and under what conditions readability measures are likely to be predictive. Given the complexity of language and of language-users, this is no easy task. The following simple model is only a first step in this direction.

The Reader's Level of Performance (e.g., his comprehension, speed of reading, depth of reading, etc.)	is a function of	The Reader's Level of Competence (e.g., his reading skills, verbal ability, specific background, etc.)	interacting with
The Reader's Level of Motivation (e.g., his reading purpose--from "reading to learn" to "reading to forget," set, "stakes," etc.)	interacting with	The Readability Level of Material (e.g., the reading grade level, word difficulty, sentence difficulty, etc.)	

Stated generally in this way, the model fits some common observations. For example, the readability level of material will be relatively unimportant to a highly competent, motivated reader; he will comprehend a more difficult version of material almost as easily, if not as easily, as a less difficult version of the same material. Readability level is not even very important for a reader of moderate competence if his level of motivation is high enough, as many average citizens demonstrate every April 15 or thereabouts. The limits under which these relationships hold now need to be specified for different groups of readers; e.g., material may be too easy for some readers under some conditions just as it may be too hard for others.

Also, as the model is refined, interesting compensatory relationships should become clearer. For example, the more motivated

but less competent reader may need to re-read, consult a dictionary, ask help from friends or experts, etc., when material is too hard for him to read. Even the more competent reader appears to spend more time at his task if the material is less, as opposed to more, readable--again within certain limits, at least.

A compensatory relationship of special interest concerns the conditions under which the effects of readability are tested. An old dictum states that subjects should be highly motivated during testing, so most experimenters do what they can to raise the level of motivation. But certain published studies seem to show, on closer analysis, that the more the experimenter has done to raise motivation, the greater is the likelihood that comprehension differences between more and less readable versions will have washed out. Another "n.s.d." study has been the result.

What should be done, it appears, is to test instead under typical motivation conditions, which often means a field test rather than a laboratory test. This observation may well apply to educational research more generally: potentially useful instructional variations may sometimes be falsely abandoned as non-significant because the motivation conditions under which testing occurs do not represent well the motivation conditions under which learning typically occurs.

Whether or not this is generally the case, it does appear to be the case for readability, at least. The author recently analyzed the readability levels of 30 sets of U.S. Armed Forces Institute

correspondence course materials. USAFI officials then related the scores to the probability students would send in all of their lessons (which is most often not the case). Sufficient course completion data were available on 17 courses for this analysis (there were insufficient data on 13 new courses). A rank-order correlation coefficient of .87 ($p < .001$) was found, holding length (a critical variable) constant. The product-moment correlation coefficient on these same data yielded a value of .75 ($p < .01$).

This study suggests that, under the typical learning conditions in USAFI correspondence instruction, readability can play a significant role. This might not have seemed to be the case if a laboratory test of the same material had been carried out instead. The role of readability needs to be further defined for other instructional situations as well, under the varied conditions suggested by the kind of model proposed here.

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